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ORIGINAL ARTICLE

Safe Villages during the 1918-1919 influenza pandemic in Spain and Portugal

A. ERKOREKA
Basque Museum of the History of Medicine and Science, University of the Basque Country (UPV/EHU), Campus Leioa, Bilbao, Spain

Keywords

1918 influenza pandemic • Spanish flu • Prevention of infectious diseases • Safe Village • Covid-19

Summary

The 1918-1919 influenza pandemic had a significantly different impact on mortality rates in Spanish and Portuguese provinces and cities. In this study, several small villages have been identified which were not affected at all by the Spanish influenza pandemic. These all shared a number of features in common: their villages were very small, comprising only a few hundred inhabitants; they were located in mountainous regions, with very poor transport infrastructure; and they were self-sufficient and capable of fulfilling their basic alimentary needs. Their inhabitants were conscious of the problem and acted together, effectively isolating themselves from surrounding villages. Since these villagers managed to avoid direct contact with ill people from other municipalities, the flu was not transmitted and the pandemic did not arise in their villages.

In this paper, it is proposed that the human habitability spaces that meet these characteristics, I call them "Safe Villages" or "Shelter Village". Knowledge of the circumstances in which the 1918-1919 flu pandemic developed and of the means employed to resist it can help us to take relevant measures when faced with future pandemics.

Introduction

The Iberian Peninsula, composed by Spain, Portugal, Andorra and Gibraltar, is the most occidental of the southern European peninsulas. Its strategic location between Europe and Africa and between the Atlantic Ocean to the West and the Mediterranean Sea to its East converted it, during the First World War, into one of the epicenters of the 1918-1919 influenza pandemic. The so-called "Spanish Flu", which is considered by Taubenberger and Morens, to be "the mother of all pandemics" [1], has been the object of a plethora of studies in recent years [2].

Its centenary has also been important for the emergence of interesting reflections about the pandemic, such as the works of Martini, Gazzaniaga, Bragazzi and Barberis Barberis [3], and also Taubenberger, Kash and Morens Morens [4]. According to the estimates of various authors, such as Patterson and Pyle [5], Johnson and Mueller [6] and Phillips and Killingray [7], this pandemic caused between 40 and 50 million deaths worldwide. Associated with the First World War, this pandemic was much more mortal than the War itself which according to Morrow [8], produced 10 million victims. Of all the soldiers who died during the War, it is estimated that around 13 per cent died due to a variety of diseases and not due to war wounds.

During the spring of 1918, a widespread, but low-mortality flu epidemic appeared in the Northern hemisphere. In Western Europe, which had been enduring the Great War, this epidemic was particularly virulent in Madrid (Spain), a city which had around 600,000 inhabitants, half of which came down with the flu [9]. This very serious episode which took place during the months of May and June, prompted international Media to call the event the "Spanish influenza" [10], starting with The Times newspaper on June 2, 1918. During the development of the pandemic, the differences in excess mortality between some Spanish provinces and others were very evident, as has been demonstrated by Chowell et al. [11]. Together with studies dealing with cultural and social factors [12], there are other partial studies about the capital [13], provinces [14] or recapitulations [15]. Good research about Portugal [16] and Andorra [17] has also been published. In continental Europe, differences in mortality rates among countries in the north and south have been quantified by Ansart et al. [18], who estimated that the mortality rate for the whole continent was 11 per 1,000 people. In the Mediterranean countries, the gross mortality rate varied from 10.6 per 1,000 inhabitants reported by Tognotti [19] for Italy, to 12 per 1,000 as reported by Echeverri [20] for Spain.

Studies which dealt with medieval epidemics, principally with the the Black Death, such as those by Naphy and Spicer [21] or that of Benedictow [22], insist on the complete absence, in those eras, of effective preventative measures to stop the expansion of the epidemics and to treat patients effectively. The web page of the London Science Museum, when referring to "The Black Death and early public health measures" [23], states the well-known Latin saying "*cito, longe, tarde*" or "*cito, longe fugeas et tarde redeas*" ("Leave quickly, go far away and

come back slowly"), as the only preventative measure in the face of these pathologies. Historians consider that these epidemics of past centuries presented common denominators, such as their gradual expansion, and their extension to all the cities and villages, even to the smallest ones; that the population density was not a conditioning factor in their development; and that the presence of health infrastructures was a *sine qua non* condition to halt their expansion.

However, as I will show here, these characteristics were not all present in the case of the Spanish flu pandemic. In fact, I have identified some villages which, despite being located within the focus of epidemic diffusion, did not present evidence of the presence of the pandemic. In this study, I present the hypothesis that there existed the human habitability spaces which were "resistant" to flu pandemic infection during the 1918-1919 period. I refer to these localities, which shared a number of features in common, as "Safe Villages" or "Shelter Villages".

This is a concept which is different to that of the maritime quarantines on the South Pacific islands [24], or in general, in small, insular nations [25]. Some researchers, such as Shanks, Brundage, Hussell, Wilson and Kippen have studied the effect of the 1918-1921 flu pandemic on populations in Pacific islands. These studies [26] provide an accurate analysis and an extensive bibliography about the subject [27]. Some Atlantic islands such as the Canary Islands [11] or Puerto Rico [27] could also be considered to be "Safe Islands" on the basis of similarities which they present with the villages studied in the present work.

Methods

The method employed here is based on field work, i.e. the direct identification of all those who died for any reason, and in particular, due to flu and respiratory system diseases, in many of the villages of the provinces of Biscay, Gipuzkoa and Navarre, located in the north of the Iberian Peninsula, bordering with France. Mortality data were obtained from church and civil archives, having identified the date, age, sex and cause of death of inhabitants around 1918. I also used other sources, such as articles, books and published studies that served to complete the information.

Results

Within the Iberian Peninsula, I identified four small villages which were unaffected by the Spanish flu pandemic and in which there was no increase in mortality during 1918-1919. One of these is located to the north of Portugal, as reported in a doctoral thesis which was defended in 1921. The other three are located in villages in the Autonomous Community of the Basque Country and in the Autonomous Community of Navarre, situated in the border region between Spain and France [28].

Amieiro

The Alijó municipality, situated in the Vila Real district in the north of Portugal, has an extension of 297 km^2 and in 1900 had a population of 19,914 inhabitants. Nowadays, it has a population of 14,300 inhabitants. It is divided into 19 small population nuclei *(freguerías)* dispersed over a wide area. Very near to the Tua river, which separates it from the Branganza district, I can find the small village of Amieiro, made up of around 40 houses grouped together thus forming an isolated village nucleus and isolated/removed from the principal transportation routes.

When the Spanish flu began to affect the neighboring municipality of San Mamede de Ribatua and eventually arrived at Alijó, "the inhabitants of this small village got together and decided to isolate themselves, and not permit the slightest contact with people from other localities. To this end, they set up lookouts on the outskirts of the village which were manned day and night, and forbade the entrance or exit of anyone. In the evenings, they lit bonfires on the roads and in big houses using pine and eucalyptus branches, and kept them going during the night, and thus managed to scare off '*a malina*' ('the bad'), so that it did not enter the village" [29].

In Amieiro, there was not a single case of flu in 1918 and 1919, and no one died due to this disease. In the previous 1889-1890 flu pandemic, the same strict isolation measures were also taken to avoid any contact with neighbors from other villages. In a similar manner, they also managed to avoid deaths or sicknesses due to the Russian flu pandemic.

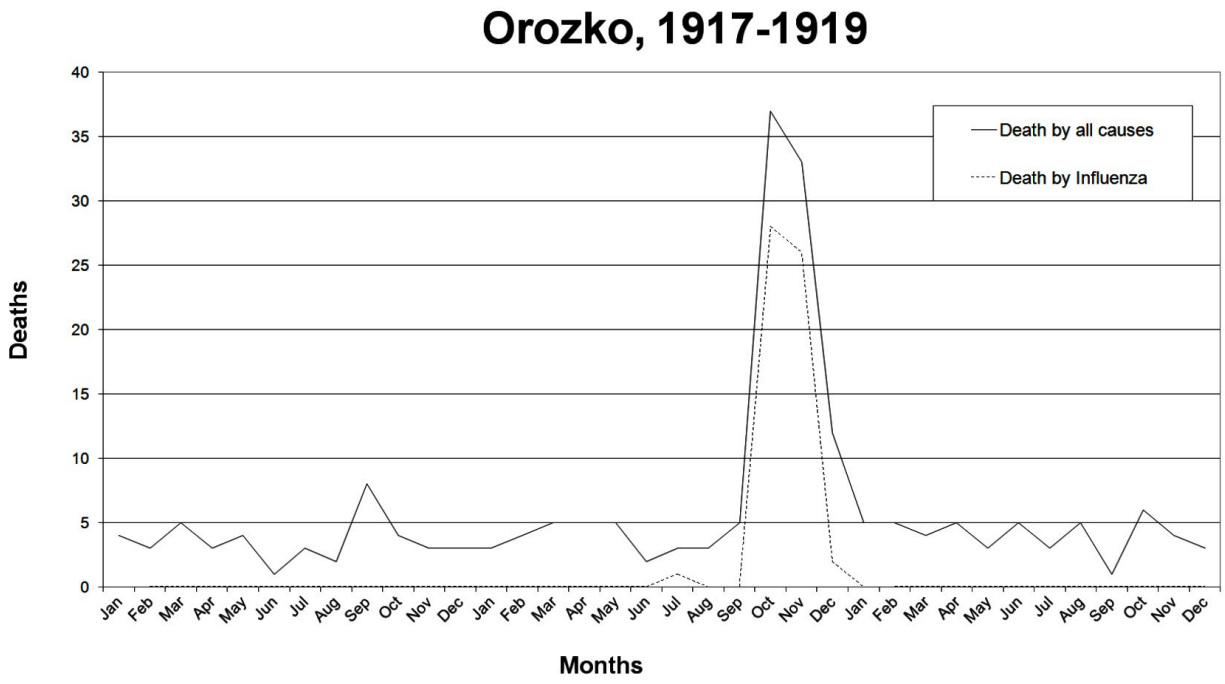
Urigoiti (Orozko, Biscay)

Orozko is a large municipality, with around 102 km^2, located in the mountainside of Gorbea, the highest mountain of the Autonomous Community of the Basque Country. It had a population of 3,109 inhabitants in the year 1900, 2,840 in 1920 and today this is around 2,800. The most important economic activities are farming and those related to forestry. The population is distributed in the principal nucleus, Zubiaur, and around various rural neighborhoods, with the most distant one being Urigoiti. This latter village is made up of 20 houses located around the parish church of San Lorenzo. The neighborhood is isolated, and is situated at the end of a road in the Gorbea mountainside.

In 1917, the mortality rate for all causes of death in the whole municipality of Orozko was 15.1 per 1,000 inhabitants. In 1918, this rose to 41.2. This substantial rise in mortality which occurred particularly in the months of October and November was due to the Spanish flu pandemic. In 1919, this mortality rate dropped to 17.2. I can deduct from these data that excess mortality due to the Spanish flu pandemic in this municipality was 26.1 per 1,000 inhabitants. The distribution of the number of deaths per month is shown in Figure 1.

Whereas in this municipality, between the months of October and November 1918, 2.5 per cent of

Fig. 1. Number of deaths due to all causes and to flu between January 1917 and December 1919 in the Orozko municipality (Bizkaia, Spain).



inhabitants died due to the Spanish flu, in the Urigoiti neighborhood, there were no deaths! It is even remembered nowadays that it was believed that there were no deaths in this neighborhood due to its isolation and because its inhabitants, to prevent the disease, drank nettle (*Urtica dioica L.*) infusion [30]. In the Basque folkmedicine, massages with nettles *(plegazinoak, ortigaciones)* have been widely used for the treatment of influenza [31].

Zerain (Gipuzkoa)

Zerain is a small village in the interior of the Gipuzkoa province dedicated to Shepherd's work and agriculture. In 1900, it had a population of 552 people and by 2016 this number had dropped to 255.

According to its Parish Archive, in 1918 10 people died, the same number dying again in 1919. In 1920, the number of deaths dropped to 6. Taking into account that the population was stable during the early decades of the 20th century, the 1918 mortality rate was 18.1 per 1,000, identical to that of 1919.

Thus, in Zerain, there was no increase in mortality with respect to other years. In fact, flu was not even mentioned as the cause of death in the autumn of 1918, nor in the beginning of the following year, as occurred in other areas of the Basque Country, where on average, 12.1 people per 1,000 inhabitants died [32], the majority of whom died in October. In particular, the 10 deaths which occurred in 1918 included: a 20 year-old man who died in February of *"grippe intestinal"* (intestinal flu, a common diagnosis in those times, not always associated with the pandemic influenza); two elderly people in February due to heart failure; and one person each month during March, April, May, June, August, October and November, the majority of whom died due to pneumonia. In 1919, 10 people died: in January, a newborn due to a developmental defect and an elderly person due to senility; in March, two elderly people due to senility and heart failure; and between May and December, three due to cancer, one to tuberculosis, one to gastroenteritis, and the last one due to uremia.

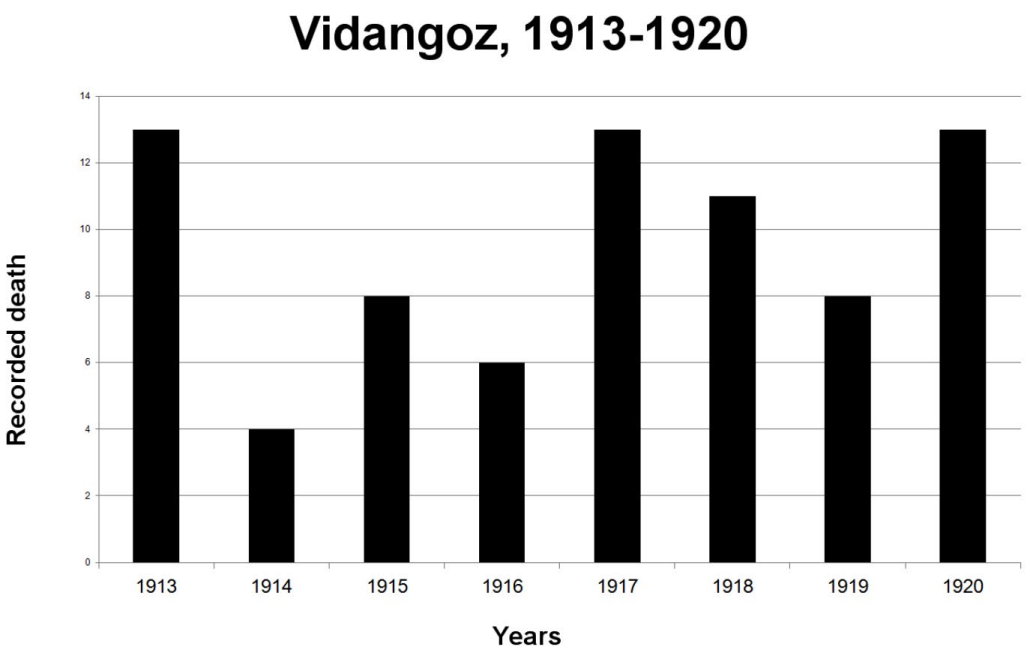
The former Director of the Bilbao Ethnographic and Historic Museum, Karmele Goñi, who was born in this village, claims that in the Autumn of 1918, during the development of the Spanish flu epidemic, the village kept itself isolated, without any communications with other nearby villages. To avoid the spread of the epidemic which was devastating other villages and to prevent it affecting them, the villagers held a religious procession which marched with the image of a saint at its head to the limit of the municipality with the neighboring village of Mutiloa. There, the religious processions of both towns met, but they did not join or mix among themselves; the neighbors of both villages maintained safe distance.

Vidángoz-Bidankoze (Navarre)

The Vidángoz-Bidankoze locality is situated in the Roncal Valley (Navarre) which is located on the southern face of the Pyrenees mountain range, (separating France and Spain). Its population at the beginning of the 20th century was 370 inhabitants (nowadays it is 95). From 1913 to 1920, an average of 9 to 10 people died each year. This means that the mortality rate due to all causes was 24.3 per 1,000 (Fig. 2).

In 1918, 11 people (6 adults and 5 children) died in this village. In January-February, an elderly person and a very young child died; in May, two newborns died, as

Fig. 2. Number of deaths due to all causes in Vidángoz-Bidankoze (Navarre, Spain) between 1913 and 1920.



well as one woman due to a postpartum infection; in July, there was a measles epidemic which killed a child and a 42 year-old adult; an elderly person also died of natural causes at 87 years of age. In October and November, two other elderly people died due to diarrhea and old age, respectively. And on 5th December, a 2 year-old girl was diagnosed with bronchopneumonia flu. The death of 8 people in 1919 was due to causes unrelated to the flu.

A news item appearing in the *Diario de Navarra* newspaper on 7th December 1918 stated that, although the Spanish flu pandemic appeared to have passed over the village of Vidángoz-Bidankoze, without affecting anyone, there were now 12 cases diagnosed with mild flu. However, only one person died, i.e. the above-mentioned girl on 5th December. She was the single victim of the pandemic in this village in the north of Navarre. Paradoxically, whereas cumulative excess mortality, presented as rates per 1,000, for the whole of Navarre, rose to 11.6 (Chowell et al.), in some villages this figure was triple, in clear contrast to that which occurred in Vidángoz-Bidankoze.

Conclusions

Here, I propose the name "Safe Village" or "Shelter Village" for these villages and others which present the same features. All of these managed to avoid the 1918-1919 flu pandemic and share the following characteristics in common:

- firstly, their geographical location is noteworthy; they are far from large communication networks, with few and difficult accesses;
- secondly, they are located in mountainous regions, either in mountainsides or in the high regions of mountain chains, and are far from large cities and middle-sized villages;
- the third feature is the large extension of these municipalities, which comprise hundreds of square kilometers in some cases;
- the population density of these small villages is very low. The villages are very small, with only a few hundred inhabitants who live in houses which are low-storey, extensive and with much space around them. Thus, in all cases, they form low density population nuclei;
- they did not have health infrastructures, such as sewerage and water treatment plants. Neither did they have regulated, controlled drinking water sources, but rather they drank from traditional fountains and springs;
- they were economically self-sufficient and produced the basic foods necessary to maintain nutritional autonomy for long periods of time;
- sociologically, they were villages whose inhabitants faced up to the problem, acted together and implemented measures to resolve the problem. This social and political consensus allowed the civil authorities (in the case of Amieiro) and the religious authorities (in the case of Zerain) to align themselves with this objective and they were able to agree on measures which achieved the absolute isolation of the neighbors of these villages with respect to the inhabitants of neighboring villages;
- since there was no contact with sick people from other villages, there was no transmission of the virus. Neither was there, at least in the cases examined here, transmission by air of the virus.

One hundred years later, in Europe at the beginning of the 21st century, it would be unrealistic to try to imitate the conditions of isolation achieved by the neighbors of these villages. However, it would be judicious to keep in mind

these experiences for when, in a not too distant future and faced with an event of epidemic emergency, it would be necessary to reproduce the model of these "Save Villages" which allowed their inhabitants to protect themselves from the terrible flu pandemic of 1918-1919, and, as I have seen in one case, of that of 1889-1890.

Thus, if I want to have a precise and accurate knowledge of what happened during the Spanish flu pandemic, it is essential to identify the facts, study them in detail, name them and adequately conceptualize them. The multidisciplinary approach provides richer and more varied research results. Other disciplines such as sociology, anthropology and ethnography can also contribute to a better understanding of past pandemics and to preparing ourselves better for those which are still to come.

In addition, the pandemics of the future, when they occur, give us surprises in their evolution and in the measures taken to contain them. In January 2020 the epidemic of covid-19, caused by the coronavirus SARS-CoV-2, appeared in the Chinese city of Wuhan, forced the authorities of this country to decree the quarantine of its entire population (11 millions of inhabitants [33]). In mid-February, the population in quarantine in cities and provinces of central China reached 60 millions of inhabitants. Quarantines were also applied in northern Italy [34], Iran, on cruise ships [35], hotels and other parts and places of the world. I have never seen in the history of medicine such high numbers of people in quarantine.

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Conflict of interest statement

The author declares no conflict of interest.

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Correspondence: Anton Erkoreka, Medikuntza Historiaren Euskal Museoa, University of the Basque Country (UPV/EHU), E-48940 Campus Leioa, Bilbao, Spain - Tel.: +34 946012790 - E-mail: a.erkoreka@ehu.eus

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